Grass

Grass Overview

Volunteer monitoring began at Grass Lake in 2002 and continued through 2004. The data indicate that this lake is high in primary productivity (eutrophic) with fair water quality.

Grass Lake has no public access boat ramp, but residents should monitor aquatic plants growing nearshore to catch early infestations of Eurasian watermilfoil, Brazilian elodea or other noxious aquatic weeds.

Physical Parameters

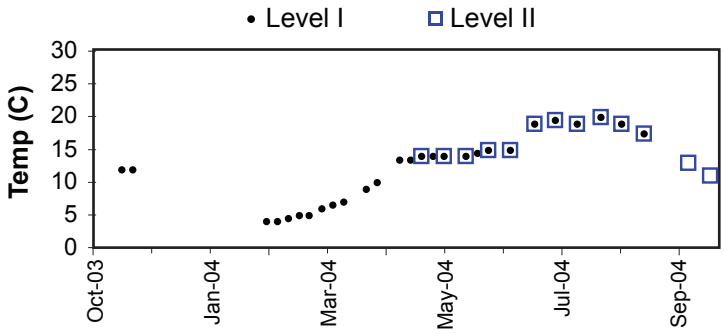
Secchi transparency ranged between 0.3 and 1.4 m through the year. The summer average was 0.6 m which was the lowest average for all the monitored small lakes in 2004. Surface water temperatures ranged between 4.0 and 20.0 degrees Celsius. The maximum temperature was the coolest recorded for the group.

Precipitation and water level records were nearly complete, showing that water levels were consistent with the regional pattern of winter high - autumn low stands. Water levels responded sensitively to large rain events as well.

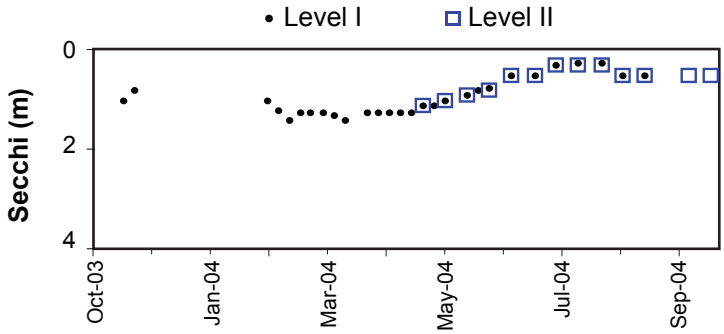
Nutrient Analysis and TSI Ratings

Total phosphorus and total nitrogen remained in reasonably constant proportion to each other through the sampling period, with the exception of one abnormally high phosphorus value which was recorded in early May. Values rose to a peak in early August and thereafter declined slowly for the rest of the season. Aside from the sample in May, the N:P ratio ranged from 22 to 46, averaging 31, suggesting generally poor conditions for nuisance bluegreen growth.

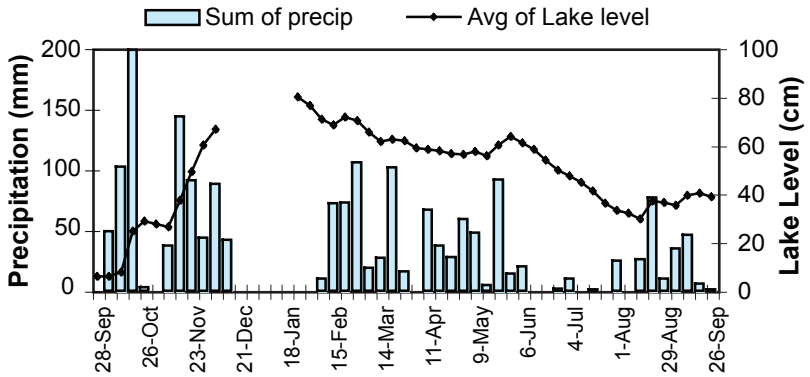
Lake Temperature



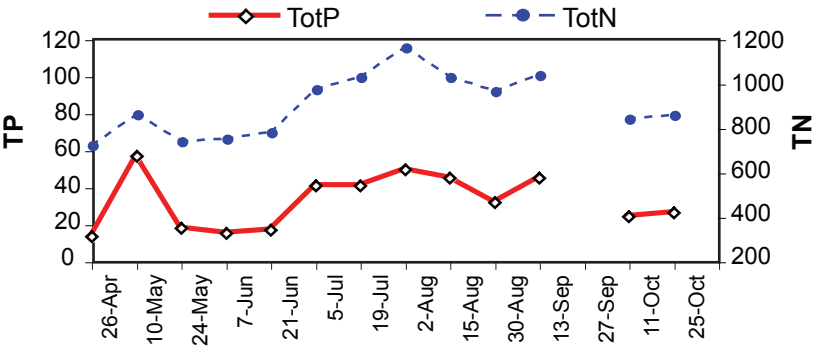
Secchi Depth



Lake Level and Precipitation



Nutrient Analysis



Grass Lake is too shallow for profile sampling to add important information about the lake.

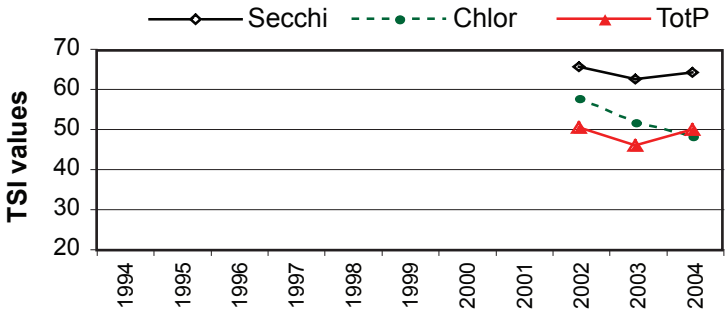
Both the TSI-chlor and TSI-TP indicators were just above the threshold for eutrophy, but the TSI-Secchi was far higher than the other two, similar to 2002 and 2003. Water color is probably a major factor in the discrepancy.

Chlorophyll Concentrations and Algae

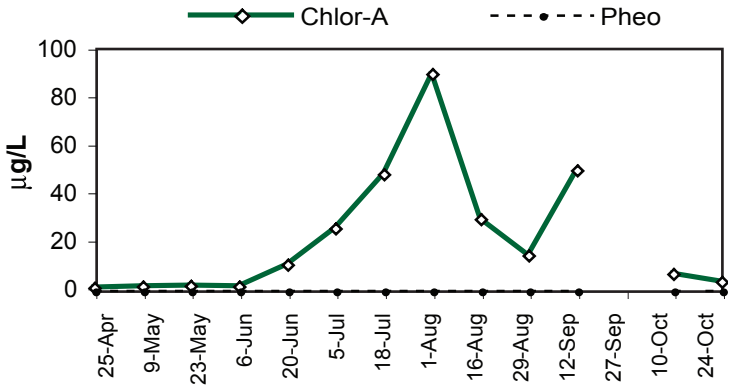
Chlorophyll rose to a peak in mid-August, consistent with nutrient concentrations. A gap in sampling occurred in September, but the data from October were among the lowest values for the year. Phytoplankton communities were dominated by colonial bluegreens such as *Anacystis* and *Aphanothece*, the euglenophyte *Euglena*, and the cryptophyte *Cryptomona*s. Diatoms such as *Tabellaria* and *Fragilaria crotonensis* were also found.

Date	Secchi	depth-m	degC	Chlor-A	TP µg/L	TN µg/L
NO DATA AVAILABLE						

TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common Algae

	Group
Anacystis sp	Cyanobacteria
Cryptomonas spp	Cryptophyta
unidentified cells	Chrysophyta

Grass

2004 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
28-Sep-03	0.0	4	6.0	4
5-Oct-03	49.0	7	6.0	7
12-Oct-03	98.5	7	7.8	7
19-Oct-03	235.0	7	24.6	7
26-Oct-03	1.0	7	28.8	7
2-Nov-03	2.0	7	27.4	7
9-Nov-03	11.0	7	26.4	7
16-Nov-03	168.0	7	37.3	7
23-Nov-03	93.0	7	49.2	7
30-Nov-03	44.0	6	59.4	6
7-Dec-03	76.0	6	65.6	5
14-Dec-03	54.0	2	69.5	1
21-Dec-03				
28-Dec-03				
4-Jan-04				
11-Jan-04				
18-Jan-04				
25-Jan-04	0.0	0	74.6	7
1-Feb-04	0.0	0	77.3	7
8-Feb-04	0.0	0	71.6	7
15-Feb-04	82.0	7	68.6	7
22-Feb-04	71.0	7	66.4	7
29-Feb-04	99.0	7	65.1	7
7-Mar-04	28.0	7	65.6	7
14-Mar-04	27.0	7	63.3	7
21-Mar-04	102.0	7	60.9	7
28-Mar-04	16.0	7	62.1	7
4-Apr-04	0.1	7	59.3	7
11-Apr-04	67.0	7	58.4	7
18-Apr-04	37.1	7	57.9	7
25-Apr-04	28.0	7	56.9	7
2-May-04	46.0	7	56.0	7
9-May-04	61.0	7	57.4	7
16-May-04	3.0	7	55.9	7
23-May-04	88.0	7	58.4	7
30-May-04	6.0	7	64.1	7
6-Jun-04	24.0	7	61.4	7
13-Jun-04	10.0	7	58.8	7
20-Jun-04	0.0	6	54.3	6
27-Jun-04	2.0	6	49.8	6
4-Jul-04	10.0	7	47.5	7
11-Jul-04	0.0	7	45.4	7
18-Jul-04	1.0	7	41.4	7
25-Jul-04	0.0	7	36.9	7
1-Aug-04	25.0	7	33.2	7
8-Aug-04	0.0	7	32.5	7
15-Aug-04	4.0	7	29.1	5
22-Aug-04	99.0	7	37.4	7
29-Aug-04	10.0	7	36.8	7
5-Sep-04	31.0	7	35.0	7
12-Sep-04	48.0	7	38.9	7
19-Sep-04	8.0	6	40.4	6
26-Sep-04	1.0	5	39.0	5
Min	0.0		6.0	
Max	235.0		77.3	
Total	1865.6			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
19-Oct-03	14:00	1.0	12.0	P3	P3	0
26-Oct-03	14:00	0.8	12.0	P3	P3	0
18-Jan-04	14:30	1.0	4.0	P2.5	P2	10
25-Jan-04	14:00	1.2	4.0	P2.5	P2	
1-Feb-04	14:30	1.4	4.5	P2	P1	6
8-Feb-04	11:30	1.3	5.0	P2	P1.5	
14-Feb-02	14:00	1.3	5.0	P2	P2	
22-Feb-04	17:00	1.3	6.0	P2	P2	
29-Feb-04	13:00	1.3	6.5	P2.5	P2	
7-Mar-04	14:00	1.4	7.0	P2.5	P2	2
21-Mar-04		1.3	9.0	P2.5	P2	
28-Mar-04	16:30	1.3	10.0	P2.5	P2.25	
4-Apr-04	14:00	1.3		P2.5	P2.25	4
11-Apr-04	11:30	1.3	13.5	P3	P2.5	4
18-Apr-04	15:00	1.3	13.5	P3	P2.5	6
25-Apr-04	15:30	1.1	14.0	P3	P2.75	4
2-May-04	14:00	1.1	14.0	P3	P3	6
9-May-04	16:45	1.0	14.0	P3	P3	
23-May-04	15:30	0.9	14.0	P3	P3	6
30-May-04	15:00	0.8	14.5	P3	P3	
6-Jun-04	18:30	0.8	15.0	P3	P3	6
26-Jun-04	8:30	0.1	15.0	P3	P3	
			.			
5-Jul-04	12:30	0.5	19.0	P3	P3	0
18-Jul-04	18:00	0.3	19.5	P3	P3	0
1-Aug-04	9:15	0.3	19.0	P3	P3	0
16-Aug-04	13:00	0.3	20.0	P3	P3	2
29-Aug-04	16:30	0.5	19.0	P3	P3	
12-Aug-04	11:45	0.5	17.5	P3	P3	0
	Min	0.1	4.0			
	Max	1.4	20.0			

* See introduction for discussion of algae assessment and goose count methods.

Grass

2004 Level II Data

Date (2004)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI		
								Secc	chl-a	TP
25-Apr	14.0	1.1	1.10	13.9	632	3	45	58.6	31.5	42.1
9-May	14.0	1.0	1.60	57.1	798	3	14	60.0	35.2	62.5
23-May	14.0	0.9	1.80	18.4	652	3	35	61.5	36.3	46.2
6-Jun	15.0	0.8	1.50	15.6	667	3	43	63.2	34.5	43.8
20-Jun	15.0	0.5	10.60	17.4	703	3	40	70.0	53.7	45.4
5-Jul	19.0	0.5	25.70	41.0	932	3	23	70.0	62.4	57.7
18-Jul	19.5	0.3	47.90	41.3	1000	3	24	77.4	68.5	57.8
1-Aug	19.0	0.3	89.40	49.9	1160	3	23	77.4	74.6	60.6
16-Aug	20.0	0.3	29.50	45.2	999	3	22	77.4	63.8	59.1
29-Aug	19.0	0.5	14.40	32.2	922	3	29	70.0	56.7	54.2
12-Sep	17.5	0.5	49.70	45.3	1010	3	22	70.0	68.9	59.2
27-Sep										
10-Oct	13.0	0.5	6.73	24.6	775	3	32	70.0	49.3	50.4
24-Oct	11.0	0.5	3.50	26.7	795	3	30	70.0	42.9	51.5
	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae	N:P	Calculated TSI		
								Secc	chl-a	TP
Mean	16.2	0.6	21.8	33.0	849.6	3.0	29	68.9	52.2	53.1
Median	15.0	0.5	10.6	32.2	798.0	3	29	70.0	53.7	54.2
Min	11.0	0.3	1.1	13.9	632.0	3	14	58.6	31.5	42.1
Max	20.0	1.1	89.4	57.1	1160.0	3	45	77.4	74.6	62.5
Count	13	13	13	13	13	13	13	13	13	13

TSI Average = 58.1